PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference U02.0086.069	FOR FURTHER ACTION	See Form PCT/PEA/416

International application No. PCT/IB2004/000048	International filing date (day/month/year) 05.01.2004	Priority date (day/month/year) 21.01.2003

International Patent Classification (IPC) or national classification and IPC

H04L1/00

Applicant

SONY ERICSSON MOBILE COMMUNICATIONS AB et al

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 8 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

   a. ☒ sent to the applicant and to the International Bureau) a total of 3 sheets, as follows:

       ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

       ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

   b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

   ☒ Box No. I   Basis of the opinion

   ☒ Box No. II   Priority

   ☐ Box No. III   Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

   ☐ Box No. IV   Lack of unity of invention

   ☒ Box No. V   Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

   ☐ Box No. VI   Certain documents cited

   ☐ Box No. VII   Certain defects in the international application

   ☐ Box No. VIII   Certain observations on the international application

Date of submission of the demand 19.11.2004	Date of completion of this report 22.04.2005

Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Stolte, N Telephone No. +49 89 2399-7989

Box No. I   Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐   This report is based on translations from the original language into the following language ,
   which is the language of a translation furnished for the purposes of:

   ☐ international search (under Rules 12.3 and 23.1(b))
   ☐ publication of the international application (under Rule 12.4)
   ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

   Description, Pages

   1-13   as originally filed

   Claims, Numbers

   1-12   filed with the demand

   Drawings, Sheets

   1/10-10/10   as originally filed

   ☐   a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐   The amendments have resulted in the cancellation of:
   ☐ the description, pages
   ☐ the claims, Nos.
   ☐ the drawings, sheets/figs
   ☐ the sequence listing *(specify)*:
   ☐ any table(s) related to sequence listing *(specify)*:

4. ☐   This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
   ☐ the description, pages
   ☐ the claims, Nos.
   ☐ the drawings, sheets/figs
   ☐ the sequence listing *(specify)*:
   ☐ any table(s) related to sequence listing *(specify)*:

   *   If item 4 applies, some or all of these sheets may be marked "superseded."

Box No. II   Priority

1. ☐ This report has been established as if no priority had been claimed due to the failure to furnish within the prescribed time limit the requested:

  ☐ copy of the earlier application whose priority has been claimed (Rule 66.7(a)).

  ☐ translation of the earlier application whose priority has been claimed (Rule 66.7(b)).

2. ☒ This report has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rule 64.1). Thus for the purposes of this report, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

Box No. V   Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-12
	No: Claims	NONE

Inventive step (IS)	Yes: Claims	6, 12
	No: Claims	1-5, 7-11

Industrial applicability (IA)	Yes: Claims	1-12
	No: Claims	NONE

2. Citations and explanations (Rule 70.7):

  see separate sheet

1   The following documents are referred to:
     D1 :   US 2002/141516 A1 (WILLENEGGER SERGE) 3 October 2002 (2002-10-03)
     D2 :   WO 00/35137 A (ERICSSON INC) 15 June 2000 (2000-06-15)

2   INDEPENDENT CLAIMS 1 and 7

2.1   The present application does not meet the criteria of Article 33(1) PCT, because the
      subject-matter of claim 1 is not inventive in the sense of Article 33(3) PCT.

2.1.1   Document D1 discloses (the references in parenthesis applying to this
          document):

          A method of channel decoding data frames in a receiver capable of multiple
          codec modes, said channel encoded frames comprised of an inband bit portion
          [paragraph 11: "transport format combination indicator"] and a data portion
          [paragraph 11: "frame data"], said method comprising:

          (a)   decoding the inband bit portion of a received frame to obtain confidence
                 levels [paragraph 17: "prioritizing", paragraph 18: "This example metric
                 prioritizes the permissible formats according to the similarity ...", "having an
                 indication more similar to the corrupted format ... higher priority", see also
                 paragraph 33]] associated with each of the codec modes ;
          (b)   choosing the most likely channel codec mode based on the highest
                 confidence level to channel decode the data portion [paragraph 37];
          (c)   decoding the data portion of the received frame using the chosen channel
                 codec mode [paragraph 37];
          (d)   performing a frame determination check to determine the quality of the
                 decoded speech frame [paragraph 6]; and
          (e)   if the decoded data frame is determined to be of poor quality, then
                 choosing the next most likely codec mode corresponding to the next
                 highest inband bit decoding confidence level and repeating steps (c)
                 through (e) [paragraph 37].

2.1.2   The only difference between the disclosure of D1 and the subject-matter of claim 1 is the type of the data, which is defined in claim 1 to be "speech" data. However, the type of the data is not relevant for the claimed method, as none of the method step reflects the particular type of the data. It is moreover a normal design measure in the art to transmit various types data over a data link, e.g. speech data.

2.1.3   The following is remarked:

Document D1 addresses the problem of decoding data encoded by different coding schemes/modes [paragraph 5]. According to D1, the <u>same</u> data type may be encoded by <u>different</u> coding schemes/modes [paragraph 12]. In this context the terms "scheme" and "mode" are considered to be equivalent expressions.

The method disclosed in D1 <u>and</u> in the application are characterized in that if the channel conditions are (very) poor, the decoding for all coding schemes is unsuccessful [D1: paragraph 40; application, page 10, lines 16-21].

D1 discloses to base the decision for the data format on the prioritized order of the transmission format indicators. This order is based on a metric ("confidence level") for each permissible format ("inband bit portion") [paragraphs 18, 37]

2.2   The same arguments as above apply to the subject-matter of claim 7 which corresponds to that of claim 1 in terms of apparatus features. Therefore, the subject-matter of claim 7 does not involve an inventive step (Article 33(3) PCT).

3   INDEPENDENT CLAIMS 6 and 12

3.1   The subject-matter of claims 6 and 12 meets the requirements of Article 33 PCT.

3.1.1   Document D2, which is considered to represent the most relevant state of the art to the subject matter of claim 6, discloses (the references in parenthesis

applying to this document):

A method of channel decoding data frames in a receiver capable of multiple codec modes, said channel encoded data frames comprised of an inband bit portion [page 8, line 16: "second field"] and a data portion [page 8, line 16: "first field"], said method comprising:

- calculating an inband decode metric for each speech codec mode [page 21, lines 7-8: "decoding metric associated with decoding the second field", *there is one metric for all codecs*];
- partially decoding data for each channel codec mode [page 16, lines 3-10; page 21, lines 3-6];
- determining the most likely speech codec mode based upon the partially decoded speech data and the calculated inband decode metric data [page 20, line 34 to page 21, lines 8: *based on the decoding metric of the second field, it is determined whether the code is selected solely on the generated estimate, or based on the estimate of the second field and the likelihood metrics generated by partially decoding the received signal. Hence, the codec is determined based on both calculated metrics*];

- and resuming (channel) decoding of the speech data using the most likely speech codec mode [page 21, lines 10-11]

3.1.3   The subject-matter of claim 6 differs from the disclosure of D2 in the following features:

a.   the type of data, which is defined in claim 6 to be "speech" data
b.   a plurality of inband decode metric is calculated, one inband decode metric for each speech codec mode.

3.1.3   None of the document cited in the International Search Report discloses or gives a hint to include difference feature b into the method of D2, and to determine the channel codec mode based upon the (best metric of the) partially decoded speech data and the plurality of calculated inband decode metrics.

3.1.4   The same arguments equally apply to the subject-matter of claim 12. Hence, also the subject-matter of claim 12 meets the requirements of Article 33 PCT.

4   DEPENDENT CLAIMS 2-5, 8-11

Dependent claims 2-5, 8-11 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step (Article 33(3) PCT), for the following reasons:

4.1   Claims 2, 8: The number of iterations is always limited, as the number of possible codecs is limited.

4.2   Claims, 3-5, 9-11: cf. D1, paragraph 41.

5   OBJECTIONS WITH RESPECT TO ARTICLE 6 PCT

The independent claims 1, 6, 7 and 12 do not meet the requirements of Article 6 PCT for the following reasons:

5.1   All claims 1, 6, 7 and 12 do not define that the inband bit portion comprises any Codec Mode Indication to indicate which codec mode is used in the frame. Hence, it is not clear for the reader, how any useful information regarding the code rate (codec) can be extracted from the inband bit data. Since this missing feature is necessary for the functioning of the claimed devices/methods, it represents an essential feature of the invention (Rule 6.3(b) PCT).

5.2   Claims 6 and 12 do not define that the "inband decode metric" is calculated from the inband bit portion of a _received_ speech frame. Hence, claim 6 and 12 are not supported by the description as required by Article 6 PCT, as their scope is broader than justified by the description and drawings.

5.3.   Moreover, claims 6 and 12 do not define that calculated metric for the inband bit

data is related to the likelihood of the corresponding codec mode. Hence, the meaning of this metric is obscure, and the reader might guess that the "metric" might be any arbitrary number (e.g. length, number of bits, number of ones ...).

5.4   The wording of all claims 1, 6, 7 and 12 fails to define any relation between the different speech codec modes and the different channel codes. Hence, the subject-matter of the claims is obscure. The reader is left in doubt how selection of a speech codec relates to the channel decoding (see description, page 3, lines 18-22).

5.5   The wording of claim 1, 10-11 is not supported. The wording can be construed such that "decoding" refers to "speech decoding", ie. decompression of the speech data. However, according to the description only channel decoding is performed (page 7, lines 14-34).
The same objection equally applies to the wording of claims 6, 7 and 12.

5.6   The wording in claim 6, page 6, lines 37 "determining the most likely speech codec mode based upon ... " is not supported by the description. In the whole application, no method is disclosed to determine the most likely mode based on the two decoding results (ie. the inband decode metric and the partial decoded speech data). Although on page 12, lines 17-21 of the description it is stated that the "most likely channel mode" is determined based on the best metric for each partial decoding attempt and the inband decoding results, the disclosed method in fact does not determine the most likely one. Only a very likely channel mode is determined. In general, it appears that the most likely channel code cannot be determined using only a metric (e.g. Euclidean distance) of the most likely codeword of each code, as all codewords in each code have to be taken into account.
The same objection equally applies to the wording of corresponding device claim 12.

5.7   The wording of claim 6, lines 37-38 "based upon the partially decoded speech data" is not supported by the description. According to the description, page 12, lines 17-21, the codec mode is determined based on the best metric of the partially decoded data, and not based on the decoded data itself as claimed.
The same objection equally applies to the wording of corresponding device claim 12.